

15-02-95

Page 1

-41-

AMENDED
CLAIMS

What Is Claimed Is:

1. A method for monitoring a parameter of a tire for a vehicle having a plurality of conductive components which form an electromagnetic path including a ground plane, the path having first and second ends, the method comprising:

generating a signal indicative of a parameter of the tire using a sensor;

transmitting the generated signal along the ground plane by introducing the generated signal to the electromagnetic path first end;

receiving a path signal at the electromagnetic path second end, the path signal being responsive to the generated signal; and

monitoring the tire parameter by monitoring the path signal.

2. The method of claim 1 wherein, while the tire is stationary, the step of generating a signal is performed at periodic intervals separated by an interval in which no signal is generated so as to conserve electrical power.

3. The method of claim 2 wherein the step of monitoring includes the step of comparing the tire parameter to a selected threshold.

4. The method of claim 3 wherein the step of generating is performed between periodic intervals in response to the tire parameter exceeding the selected threshold.

5. The method of claim 1 further comprising:
indicating status of the monitored tire parameter independent of magnitude of the monitored tire parameter.

15-02-98

AMENDED
CLAIMS

-42-

6. The method of claim 1 further comprising:
mounting the sensor within the tire on a
conductive element which provides an electrical
communication path to the first end of the
electromagnetic path.
7. The method of claim 1 wherein the step of
monitoring comprises:
displaying at least one alphanumeric character
indicating occurrence of an alarm state which identifies
a particular tire as a source of the alarm state.
8. The method of claim 7 wherein the step of
monitoring further comprises:
receiving a first signal indicative of a user
request to terminate the alarm state;
terminating the alarm state in response to the
first signal;
receiving a second signal indicative of a
request from the user to provide information relative to
the source of the alarm state in addition to identifying
the source; and
displaying the tire parameter corresponding to
the source in response to the second signal.
9. The method of claim 8 wherein the step of
monitoring further comprises:
sounding an audio alarm indicating the
occurrence of the alarm state.
10. The method of claim 7 further comprising:
storing information relative to the alarm
state for future retrieval including at least an
indication of time of the alarm state.
11. The method of claim 7 wherein the step of
displaying comprises identifying a particular tire as a

-43-

source of the alarm state using a phase shift of the received path signal.

12. A system for monitoring a parameter of a tire for a vehicle, the system comprising:

- a sensor for generating a signal indicative of the parameter of the tire;

- a ground plane including an electromagnetic path passing through a plurality of conductive components of the vehicle, the electromagnetic path having first and second ends;

- a transmitter, in electrical communication with the sensor and with the electromagnetic path first end, for transmitting the generated signal along the electromagnetic path;

- a receiver, in electrical communication with the electromagnetic path second end, for receiving a path signal at the electromagnetic path second end, the path signal being responsive to the generated signal; and

- a monitor, in electrical communication with the receiver for monitoring the tire parameter by monitoring the path signal.

13. The system of claim 12 wherein the sensor comprises:

- a first conductive plate which flexes in response to tire pressure and a second conductive plate which is stationary with respect to the first conductive plate such that the capacitance between the two plates is a function of pressure within the tire.

14. The system of claim 13 wherein the sensor is mounted on a valve step of the tire and wherein the electromagnetic path comprises:

- a wheel rim for the tire;

- a conductive spring extending between the

18.02.95

AMENDED
CLAIMS

-44-

wheel rim and the sensor;

at least one wheel bearing for rotatably supporting the wheel rim on a non-rotating member; and the non-rotating member.

15. The system of claim 12 further comprising means for activating the sensor only during rotation of the tire so that the signal is generated only at periodic intervals when the tire is stationary for a predetermined period of time.

16. The system of claim 15 further comprising a capacitive storage element in communication with the sensor to provide electrical power to the sensor when the tire is stationary.

17. The system of claim 12 wherein the sensor comprises an inductor for creating an inductive communication link for exchanging information with a remote controller.

18. The system of claim 17 wherein the sensor further comprises a programmable processor in electrical communication with the monitor for determining an alarm condition based upon the monitored tire parameter.

19. The system of claim 17 further comprising:

a first temperature sensor disposed within the tire for generating a first temperature signal indicative of the temperature of the tire;

a transmitter in electrical communication with the sensor for transmitting the tire temperature signal along an electromagnetic path including a ground plane of the vehicle;

a second temperature sensor associated with the vehicle for generating a second temperature signal

18.02.95

AMENDED
CLAIMS

-45-

indicative of the ambient temperature of the air surrounding the vehicle; and

a monitor in communication with the first and second temperature sensors for determining a tire pressure in dependence upon the first and second temperature signals.